SUMMIT® DM
MULTI-NET®
MOBILE RADIO

OPERATING MANUAL

SAFETY INFORMATION

Proper operation of this radio will result in user exposure below the Occupational Safety and Health Act and Federal Communication Commission limits.

WARNING

DO NOT allow the antenna to come close to, or touch, the eyes, face, or any exposed body parts while the radio is transmitting.

DO NOT operate the radio near electrical blasting caps or in an explosive atmosphere.

DO NOT operate the radio unless all the radio frequency connectors are secure and any open connectors are properly terminated.

DO NOT allow children to operate transmitter-equipped radio equipment.

This device complies with Part 15 of the FCC rules. Operation is subject to the condition that this device does not cause harmful interference. In addition, changes or modifications to this equipment not expressly approved by the E.F. Johnson Company could void the user's authority to operate this equipment (FCC rules, 47CFR Part 15.19).

LAND MOBILE PRODUCT WARRANTY- The manufacturer's warranty statement for this product is available from your product supplier or from the E.F. Johnson Company, 299 Johnson Avenue, P.O. Box 1249, Waseca, MN 56093-0514. Phone (507) 835-6222.

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FEATURES

GENERAL FEATURES

- Up to 100 systems programmable
- Each system programmable for Multi-Net®, LTR®, or conventional operation
- Up to 11 (Multi-Net) or 10 (LTR and conventional) groups programmable per system
- Liquid Crystal Display (LCD) with backlight
- Six programmable option switches
- System and group scan
- User programmable system and group scan list
- Up to 10 banks of systems selectable
- Voice encryption available
- Call indicator
- Proceed (clear-to-talk) tone
- Emergency switch
- Telephone mode for convenient telephone calls

MULTI-NET FEATURES

- Busy queuing
- Auto-registration
- Up to eight different status messages can be sent automatically
- Specific mobiles can be called (unique ID calls)
- Transmit inhibit

LTR FEATURES

- System search
- Free system ringback
- Transmit inhibit

CONVENTIONAL FEATURES

- Busy indicator
- Call Guard® squelch control
- Transmit disable on busy
- Monitor mode
- Repeater talk-around
- Priority group sampling (with first and second priority groups)

NOTE: System operator programming determines the availability of some of the preceding features.

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FRONT PANEL CONTROLS

On-Off/Volume - Pressing this knob turns power on and off. Turning it sets the volume level. The vehicle ignition switch may also control power and have to be on. Refer to "Power Turn-Off Delay" on page 13 for more information. If the remote control unit is used with a front mount transceiver to provide dual controls, the volume level may be the combined setting of both units.

Select Switch - This is a dual-function switch that changes the selected system or group and selects information in the Menu mode (see page 18).

When selecting systems or groups, a bar above the system and group digits indicates which is currently being changed. To switch this bar between digits, press the Select switch. Then to increase or decrease the selected system or group number, turn this switch clockwise or counterclockwise. Only systems and groups in the current bank can be changed (see page 12). A tone sounds each time the system or group changes (unless tones have been disabled).

The transceiver can be programmed so that the bar defaults to either the system or group digit when power is turned on or after a digit is changed. In addition, the time that must elapse before it returns after a digit change is programmable for 1-15 seconds or infinite.

Option Switches - Up to six option switches can be programmed by your system operator to control various functions. A label on the switch identifies the function it controls. The option switch functions are described starting on page 18.

Transmit Indicator - This red indicator shows when the transmitter is on.

Microphone Jack - Connection point for the microphone.

Speaker - This transceiver has an internal speaker located behind the grille. An optional external speaker may also be used if desired. The internal speaker is disabled when an external speaker is used.

REMOTE CONTROL UNIT JACK
ACCESSORY JACK
ANTENNA JACK
POWER JACK

REAR PANEL JACKS

Antenna Jack - Type N jack for connecting the antenna.

Power Jack - Connection point for the 12-volt, negative ground power source.

Remote Control Unit Jack - Connection point for the remote control unit if it is used. This jack is optional with front mount transceivers.

Accessory Jack - Connection point for the ignition sense input and optional accessories such as an external speaker (4-ohm, 12-watt) and horn/light alert.

PHONE SYSTEM/GROUP
MONITOR
ENCRYPTION ENABLED
ALPHANUMERIC DISPLAY
SYSTEM NUMBER
STATUS DISPLAY
GROUP NUMBER

DISPLAY

NOTE: The display backlight may turn on with transceiver power or it may be manually turned on and off with the BKLHT option switch or Menu mode "BACKLIGHT" parameter (see page 18).

System Number - Indicates the currently selected system number. System numbers up to 99 can be programmed.

Group Number - Indicates the currently selected group number. Group numbers up to 11 (Multi- Net) or 10 (LTR/ conventional) can be programmed.

Alphanumeric Display - This 10-character area of the display indicates a unique identification for the selected group. For example, "GAS TRUCK" could be displayed when a certain group is selected. It also displays various error and status messages.

Status Display - These two characters indicate the following status information:

Rotating clock-like symbols in both positions indicate that scanning is occurring.

This symbol in the left position indicates that the displayed system is in the scan list. Likewise, this symbol in the right position indicates that the displayed group is in the scan list.

This symbol in the right position indicates that group scanning is occurring.

P1/P2 - When a conventional system is selected, "P1" indicates that a message on a priority 1 group is being received, and "P2" indicates that a message on a priority 2 group is being received. Refer to "Priority Group Sampling" on page xx for more information.

ON/OF - When the menu mode is selected by the MENU switch, "ON" indicates that the displayed parameter is active, and "OF" indicates that it is inactive.

- Indicates that the function controlled by the option switch above it is active. For example, this symbol below the Scan switch indicates that the scan mode is enabled. Only certain switches require this indicator.

- Indicates that the displayed system/group is programmed for telephone or special calls.

- Indicates that encryption is enabled.

MON - Indicates that the monitor mode is enabled (conventional systems only). This mode is enabled by taking the microphone off-hook or pressing the MON switch (if available). The monitor mode disables squelch control features so that all messages are heard on the system. Refer to "Monitor Mode" description on page 11 for more information.

BUSY - On conventional systems only, this indicates when the selected system/group is busy. If this indication appears but no message is heard, Call Guard squelch is probably being used and a call was detected for someone else.

CALL - Indicates that a call was received while you were away from the vehicle. This indication can be programmed so that it appears only when certain calls are received. It is turned off by pressing the Select switch, an option switch, or the microphone push-to-talk switch, or by turning power off and then on again.

"**-**" **-** The bar above the system and group digits indicate which digit will be changed if the Select switch is turned. Refer to Select switch description in preceding section for more information.

STANDARD MOBILE-TO-MOBILE CALLS

Introduction

The standard mobile-to-mobile call is the type you will probably make most often. This type of call is between you and another mobile or control station in your radio system. The main difference between this call and the telephone and special calls described in the next section is that no number is dialed when it is placed.

Placing a Standard Mobile-To-Mobile Call

1. Turn power on and set the volume level if required.

2. If necessary, select the desired system/group using the front panel Select switch (see page x). The selected system/group is displayed even when scanning.

3. If a conventional system is selected, the channel must be monitored before transmitting as described on page x.

4. Press the microphone PTT (push-to-talk) switch and operation is as follows with the various types of systems:

Multi-Net and LTR - If the short proceed tone sounds, the system is successfully accessed and speaking can begin. Proceed to step 5.

If a busy condition exists, the busy tone sounds and "SYSTEM BSY" is displayed. If you keep the PTT switch pressed, the system is accessed when it becomes available. Otherwise, try again later. If a Multi-Net system is selected and the Busy Queuing feature is programmed (see page 13), the call goes into a queue when the PTT switch is released.

If an out-of-range condition exists, the intercept tone sounds and "OUT-OF-RNG" is displayed. Drive the vehicle closer to the radio system or away from shielding structures and try again. If a Multi-Net system is selected and the Auto-Registration feature is enabled, (see page 14), the transceiver automatically changes sites when an out-of-range condition occurs.

Conventional - If the proceed tone has been enabled by programming, it sounds to indicate that speaking can begin. However, the presence of this tone does not indicate that a busy or out-of-range condition does not exist (see "Conventional Operation" on page 11).

5. Release the PTT switch and listen for a response. The PTT switch must be pressed to talk and released to listen. When the conversation is finished, place the microphone back on-hook.

Receiving a Standard Mobile-to-Mobile Call

1. Turn power on and set the volume level if required.

2. Select the desired system/group using the Select switch. If the scan feature is available, you may also enable scanning by pressing the SCAN option switch.

3. When a call is received, the display indicates the system and the group of the call. To respond to the call, take the microphone off-hook and press the PTT switch. If scanning, the system/group on which a response occurs is controlled by programming. See "Transmitting In The Scan Mode" on page 11.

4. The PTT switch must be pressed to talk and released to listen. When the conversation is finished, place the microphone back on-hook.

TELEPHONE AND OTHER SPECIAL CALLS

NOTE: In order to place and receive telephone or special calls, your transceiver must have been programmed for that service. In addition, you must have a microphone with a DTMF keypad (unless you call only pre-programmed numbers).

Introduction

Telephone calls allow you to access the public telephone network, and special calls allow you to call specific mobiles in your site or some other site. After the system is accessed, a number must be dialed using the microphone keypad or recalled from memory using the Phone Mode (see page 15).

The following information describes how LTR/ Multi-Net telephone calls and Multi-Net special calls are placed and received. If you can make telephone calls on conventional systems, the procedure may be slightly different. Your system operator will then provide you with additional information.

Placing a Telephone or Special Call

1. Turn power on and set the volume level if required.

2. Take the microphone off-hook and note the displayed system/group. If necessary, select the desired system/group using the Select switch. The handset symbol appears in the display when a system/group programmed for a telephone or special call is selected.

   The Phone Mode may also be selected if you have the PHON option key or TELEPHONE menu parameter (see page 15).

3. Press the PTT switch and then release it when the proceed tone sounds. If a dial tone then sounds, proceed to step 4. If a busy or out-of-range condition is indicated, proceed as follows:

   Busy - A busy condition is indicated by a busy tone and "SYSTEM BSY" in the display. If a Multi-Net system is selected and the Busy Queuing feature is available (see page 13), it automatically places the call in a queue when PTT switch is released.

If an LTR system is selected, the Free System Ringback feature is automatically selected when the PTT switch is released. This feature signals you when the system is no longer busy (see page 16 for more information).

Out-of-Range - If an out-of-range condition exists, it is indicated by an intercept tone and "OUT-OF-RNG" in the display. If an LTR system is selected and the System Search feature is available (see page 16), it may be selected to automatically search for a free system.

If a Multi-Net system is selected and the Auto-Registration feature is available (see page 14), it automatically changes sites when an out-of-range condition occurs. If these features are not available, drive the vehicle closer to the radio system or away from shielding structures and try the call again.

4. Dial the number using the keypad on the microphone. If the transmitter keys automatically when a number is dialed, the PTT switch does not need to be pressed while dialing.

5. When you finish dialing the number, release the PTT switch if it was pressed.

With LTR calls, ringing of the other party is then heard. With Multi-Net calls, a short tone sounds to indicate that the number was accepted by the system. Then, if it is a telephone call, ringing of the other party occurs (or a busy tone is heard if the line is busy). If it is a special call, a second short tone sounds to indicate that speaking should begin. No ringing of the other party occurs.

6. The PTT switch must be pressed to talk and released to listen. You cannot talk and listen at the same time because no messages are received while the PTT switch is pressed.

7. When the conversation is finished, terminate the call by pressing the # key. Place the microphone back on-hook.

Receiving a Telephone or Special Call

1. Turn power on and set the volume level if required.

2. Select the system/group programmed for these calls or enable system scanning by pressing the SCAN switch (if available).

3. When a ringing tone is heard, answer the call in the normal manner (press the PTT switch to talk and release it to listen).

4. When the conversation is finished, terminate the call by pressing the # key. Three beeps indicate that it has been terminated. Place the microphone back on-hook.

Calling a Mobile From a Landside Telephone

Mobiles can also be called from a landside telephone. With some radio systems, a mobile may have a unique telephone number so that it can be dialed directly. With others, the number of the radio system is dialed. Then when the system answers, a beep sounds and the number specifying the mobile being called is dialed. This number is supplied to you by your system operator, and it must be dialed using a tone-type telephone. Depending on the type of call being made, a ringing tone then sounds or another beep sounds which indicates that speaking can begin.

SYSTEM SCAN

Introduction

The system scan feature monitors the programmed systems of the current bank. When a message is detected that the transceiver is programmed to receive, scanning stops and the message is received. Shortly after the message is complete, scanning resumes.

System scanning is turned on and off by the SCAN option switch (see page 3). When system scanning is enabled, a triangle (Δ) is indicated in the display below the switch. The microphone must also be on-hook for scanning to occur (unless off- hook detection has been disabled).

When system scanning is actually occurring, "SNGLE SCAN" or "MULTI SCAN" is indicated in the alphanumeric display (see "Multi-Site and Single-Site Scan" description on page 11). In addition, rotating symbols are present in both status displays between the system and group numbers.

Scanning is sequential through the programmed systems unless they have been deleted from the scan list (see "Scan List Programming" which follows) or single-site scan is used. The selected system and group can be changed while scanning using the Select switch in the normal manner. Scanning temporarily halts while the change is being made.

When a call is received in the scan mode, the display indicates the system/group of the call. However, this may not be where transmissions occur (see "Transmitting in the Scan Mode" on page 11).

Scan Resume Delay

After a message is received or transmitted while scanning, there is a delay before scanning resumes. This delay is programmable by your system operator for 0-7 seconds. The delay after a message is received prevents another message from being received before a response can be made. The delay after a message is transmitted ensures that you hear a response to your message instead of some other message occurring on another system/group.

There is also a scan continue timer that can be programmed by your system operator. If this timer is used, it sets the maximum time that a message is received before scanning resumes. This can prevent scanning from being interrupted for long periods by lengthy messages.

Scan List Programming

Systems and groups can be added to or deleted from the scan list if the transceiver is equipped with an A/D (add/delete) option switch. The bar above the system or group indicates which changes when this switch is pressed. To move this bar between the system and group displays, press the Select switch.

The scan list status of a system or group is indicated by an asterisk (*) in the status display. An "*" next to the system number indicates that the displayed system is in the scan list and scanned normally. Likewise, an "*" next to the group number indicates that the displayed group is in the scan list. When scanning is occurring, the scan list status is not indicated because the rotating scanning indicators are displayed.

The displayed system or group can be deleted from the scan list while listening to a message on that system or group. Scanning resumes shortly after the system or group is deleted. If the last system or group is deleted from the scan list, the last selected group is still scanned.

The transceiver can be programmed to either save or not save changes to the scan list when power is turned off. This programming is done by your system operator or by the Menu mode SCAN SAVE parameter if it is selectable (see page 18). If "ON" is selected, the changes are saved and the list is the same when power is turned back on. If "OF" is selected, they are not saved and the scan list reverts to the status that existed when "ON" was last selected.

Transmitting In The Scan Mode

When the transmitter is keyed in the scan mode, programming by your system operator determines the system/group on which transmissions occur. If this programming causes the selected system/group to change, it also determines what system/group is selected when the scan mode is exited by pressing the Scan switch. The three programmable configurations are as follows:

Last Selected System/Group - Transmissions in the scan mode always occur on the system/group that was last selected by the Select switch. To respond to a call not on the selected system/group, the scan mode must be exited by pressing the Scan switch. If this is done before scanning resumes, the system/group of the call becomes the selected system/group and it does not need to be changed manually.

Last Received - The selected system/group changes to the system/group of a call. Therefore, you can always respond to a call without having to manually change the system/group. This configuration may be programmed if you normally respond to calls on various system/groups while scanning.

Temporary Last Received - The system/group changes to that of a call for the scan delay period described on page 23. Then when the delay expires and scanning resumes, the selected system/group is again displayed. Therefore, you can respond to a call without changing the selected system/group as long as you do so before scanning resumes.

With the preceding modes, there is also a programmable bank option (see page 32) to have transmissions occur on a preprogrammed fixed system/group if the transmitter is keyed <u>while scanning is occurring</u>. As described on page 23, scanning is occurring when "MULTI SCAN" or "SNGLE SCAN" and the rotating indicators are displayed.

Since taking the microphone off-hook normally halts scanning (unless off-hook detection is disabled), the transmitter may have to be keyed with the microphone on-hook. If the transmitter is keyed while scanning is halted, such as to respond to a message, this feature has no affect on operation. If a transmission controlled by this feature occurs, the selected system/group changes to the preprogrammed system/group.

Multi-Site and Single-Site Scan

The transceiver can perform either Multi-Site or Single-Site scanning. The type of scanning is usually selected by your system operator programming, but can also be selected by the Menu mode "SCAN SELCT" parameter if it is available (see page 49).

As described earlier, the type of scanning is indicated during scanning by "SNGLE SCAN" or "MULTI SCAN" in the alphanumeric display. The Multi-Site type scans all system/groups in the current bank unless they are deleted from the scan list. This type of scanning is always used if LTR or conventional systems are scanned.

The Single-Site type scans only Multi-Net systems in the current bank that access the same radio site. This type of scanning can be selected with an LTR or conventional system selected only if auto-registration is used (see page 34). Auto-registration then occurs and scanning begins on that site. If an LTR or conventional system is selected and auto-registration is not used, an error tone sounds and scanning does not occur when the Scan switch is pressed.

If you must select the type of scanning or if some systems are not scanned, your system operator will provide you with additional information.

Group Scan

The Group Scan feature can be programmed on each system by your system operator. Group scanning occurs whenever a system programmed for group scan is selected or scanned with the microphone on-hook (there is no switch for selecting this feature). Group scanning is indicated when all segments of the status display next to the group number are on. However, there is no group scan indicator when system scanning is occurring because rotating symbols appear in both locations of the status display. The group scan list can be programmed as described in "Scan List Programming" on page 8. The operation of group scanning on the different types of systems is described in the next two sections.

Scanning Multi-Net and LTR Systems

With group scan, calls are received on all selectable groups of a system, regardless of which is selected. In addition, the display automatically changes to the group on which a call is received. Without group scanning, calls are received on only the last-selected group. Each Multi-Net or LTR system may also be programmed with fixed and block groups on which calls are always received.   Refer to "Calls on Priority and Block IDs" on page 14 for more information.

Scanning Conventional Systems

As with Multi-Net and LTR systems, calls are detected on all groups of a system with group scan. If group scan is not programmed, calls are detected on only the last selected group. Call Guard squelch and other squelch control techniques are detected when scanning as long as the monitor mode is not enabled (see description on page 11). If the monitor mode is enabled, all calls occurring on a system (channel) are received.

Priority groups can also be sampled when scanning conventional systems. This feature ensures that important calls on a priority group are not missed while listening to a call on a non-priority group. Refer to "Priority Group Sampling" on page 17.

OPERATING MODES

Introduction

Each selectable system can be programmed for Multi-Net, LTR, or conventional operation. The type or types of operation that are programmed is determined by the radio equipment that is being used by your system operator. There are only a few differences in operation that are of concern to the user. These differences are described in the following information and also elsewhere in this manual as required.

Multi-Net and LTR Operation

The Multi-Net mode provides the most sophisticated operating features. These features include Busy Queuing, Auto-Registration, Status Messages, and the ability to place calls to individual mobiles in your site or some other site. Refer to "Multi-Net Features" starting on page 13 for more information. There are also features unique to LTR operation, and they are described starting on page 16.

Both Multi-Net and LTR operations provide automatic channel selection and monitoring before transmitting. In addition, telephone calls can be placed almost as conveniently as with a standard telephone, and special tones and display messages indicate busy and out-of-range conditions. Selecting a Multi-Net or LTR group actually selects a specific ID code which controls the mobile being called and also what calls are received.

Conventional Operation

With conventional operation, selecting a system actually selects a specific radio channel. Then selecting a group (if available) selects the mobile or group of mobiles being called or from which calls are received on that channel. There are no tones or display messages to indicate busy or out-of-range conditions. Therefore, a busy channel must be detected as described in the next section, and an out-of-range condition may exist if you are unable to get a response from the mobile you are calling.

Conventional Monitoring Before Transmitting

Before transmitting in the conventional mode, government regulations require that you monitor the channel before transmitting to make sure that it is not being used by someone else. If you were to transmit while someone else was talking, you would probably disrupt their conversation.

If the Transmit Disable On Busy feature is programmed (see description on page 16), monitoring is performed automatically. If it is not used, monitoring is performed as follows:

- When not system or group scanning, note if "BUSY" is being displayed. If it is not, the channel is free and a message can be sent.

- Enable the monitor mode by taking the microphone off-hook or pressing the MON switch if available. The monitor mode is indicated by "MON" in display, and it disables any programmed squelch control features so that all messages are heard. It also halts scanning if applicable.

- If equipped with the CG option switch, both transmit and receive Call Guard squelch or other squelch control features can be disabled on the selected group only. The disable mode is indicated by a triangle (Δ) in the display under the switch.

The transceiver can also be programmed so that a microphone off-hook condition is not detected. The Transmit Disable On Busy feature or MON/CG switches must then be used to perform monitoring.

GENERAL FEATURES

NOTE: The following features are available with all three types of operation (Multi-Net, LTR, and conventional).

Time-Out Timer

The Time-Out Timer automatically disables the transmitter if it is keyed continuously for longer than the programmed time. It is usually programmed by your system operator for 0.5-5 minutes. When this timer times out, the transmitter is automatically disabled, the intercept tone sounds, and "TX TIMEOUT" is displayed.

Five seconds before time-out occurs, a warning beep sounds. The timer is reset by releasing the PTT switch. One use of this feature is to prevent a blocked channel caused by an accidentally keyed transmitter. Another use is to prevent possible transmitter damage caused by transmitting for extended periods.

Call Indicator

The call indicator is the word "CALL" in the display. The purpose of this indicator is to show when a call is received while you were away from the vehicle. It can be programmed by your system operator to come on only when calls are received on specific groups. To turn this indicator off, change any front panel control, take the microphone off-hook, press the PTT switch, or turn power off and then on again.

Proceed (Clear-To-Talk) Tone

This is a short tone that sounds when the PTT switch is pressed, and it indicates that the radio system has been successfully accessed and speaking can begin. It is standard on LTR and Multi-Net systems and programmable by your system operator on conventional systems. This and other tones can also be disabled by system operator programming or by the Menu mode "RADIO SNDS" parameter if it is selectable (see page 48).

With all types of calls on LTR and Multi-Net systems, if the system is busy when the PTT switch is pressed, the busy tone sounds and "SYSTEM BSY" is displayed. If you continue to press the PTT switch, the system is accessed when it is available and the proceed tone sounds. If an out-of-range or some other error condition exists, the intercept tone sounds and the error condition is displayed.

If the proceed tone is used on conventional systems, it does not sound if the system is busy. However, it does not indicate conventional out-of-range conditions, so it sounds even if that condition exists.

Horn/Light Alert

If this feature has been installed by your system operator, it activates an alert such as the vehicle horn or lights when calls are received on groups programmed for this feature. When the alert is enabled and the proper call is received, it turns on once per second for 3 seconds and then goes back to the disabled state.

The horn alert on-off mode can be changed by the HORN option switch or "HORN/LIGHT" menu parameter (see page 43). It is programmed to operate in one of the modes described below. Ignition switch control of power is described in "Power Turn-Off Delay" which follows.

Manual Off/On Mode - The mode does not change when power is turned on and off by either the ignition switch or power switch. Therefore, it is entirely controlled by either the option switch or menu parameter.

Auto Off and On Mode - It always turns off when the ignition switch is turned on, and then automatically back on again when the switch is turned off (if there is a turn-off delay). It also automatically turns off if power is turned on by the power switch. This automatic operation overrides any off-on mode that may have been selected by the option switch or menu parameter.

Bank Select

Up to ten banks of systems can be programmed. For example, one bank could be programmed for Chicago and another for St. Louis. Each bank contains a unique set of systems that may or may not be the same as the systems in another bank. Only the systems in the current bank can be selected or scanned.

To change from one bank to another, the Menu mode "BANK SELCT" parameter or the BANK option switch is used. The Select switch is turned to move to the desired bank and then pressed to select that bank. The current bank is identified by the unique identification which momentarily appears in the alphanumeric display. For example, "CHICAGO" or "ST LOUIS" could be displayed.

Profile

Your system operator can program your transceiver with a profile that determines the power-on configuration of several operating functions. For example, the transceiver can be programmed so that the backlight and Horn/Light function are on and a specific bank is selected.

However, if a function is controlled by an option switch or the Menu mode, it returns to the condition that was selected by those features. The functions that can be programmed in the profile are as follows. Descriptions of these features start on page 18.

Auto-Registration	Scan Type Select
Auxiliary 1 and 2	Priority
Backlight	Radio Sounds
Bank Select	Scan List Save Mode
View Angle Adjust	LTR System Search
Encryption	Talk-Around
External PA	Telephone Number
Horn/Light	Status

Emergency Switch

The emergency option switch is used to set up a high-priority call. If this switch is programmed, it is the switch on the left side of the display. An external switch, such as a foot-operated type, may also be used. With Multi-Net systems, either manual or automatic operation is available; with LTR and conventional systems, only manual operation is available.

When manual operation is programmed, a specific system/group is selected and the transceiver goes into a high-priority access mode. However, no call is placed automatically. This access mode minimizes, as much as possible, the chance that the system will be busy when the call is placed.

When automatic operation is programmed, the transceiver automatically transmits an emergency message on the emergency system/group. This message is transmitted at the highest priority until an acknowledgment is received from the dispatcher. If you have the emergency switch feature, your system operator will provide additional information on how to use it.

Power Turn-Off Delay

The transceiver can be programmed so that the vehicle ignition switch as well as the front-panel power switch controls transceiver power. In addition, delays of 10 or 30 minutes, or 1, 8, 10, or 12 hours or infinite (no turn-off) can be programmed. The delay can be canceled at any time by turning power off using the front-panel switch or turning the ignition switch back on.

A delay allows features such as the horn alert and call indicator to remain active for a time after the vehicle is turned off. At the same time, advantages of ignition switch control can be utilized   such as preventing battery discharge that may occur if the transceiver is accidentally left on for an extended period (see "Preventing Battery Discharge" on page 26).

MULTI-NET FEATURES

Busy Queuing

The Busy Queuing feature places the call in queue if the system is busy when the PTT switch is pressed. Then when the system becomes available, a tone sounds and the call can be placed if desired. This feature is available if it has been enabled by programming, and it functions with all types of Multi-Net calls. Busy queuing operates as follows:

If the system is busy, the busy tone sounds and the queue mode is entered automatically when the PTT switch is released. The busy tone then stops sounding and "IN QUEUE" is displayed. When the system becomes available, either a dial tone or beep sounds. The dial tone sounds if it is a telephone call, and a beep sounds if it is some other type of call. The call can then be placed in the normal manner.

If no call is placed soon after this tone sounds, the queue mode is automatically exited and normal operation resumes. The queue mode is also exited if a call is received on the selected group or if the PTT switch or any of the front panel switches are activated while no call is being received.

Calls on other system/groups are received normally while in the queue mode. You can respond to the call and then normal queuing of a call resumes shortly after the call is finished. Group scanning continues if it is programmed on the system. However, system scanning is temporarily disabled, so calls are not received on other programmed systems.

Auto-Registration

Multi-Net sites can be linked together to provide wide area coverage. Auto-registration may then be used to track the location of mobiles so that calls can be automatically routed to the correct site. To have this feature, it must have been programmed by your system operator and system scanning must be enabled by the SCAN switch. In addition, if the Menu mode "MN AUTOREG" parameter is selectable, auto-registration must be enabled by that feature.

Auto-registration operates as follows: When you move out of range of the current site, the transceiver automatically begins searching for another site. While it is searching, "AUTO REG" and the scan message are alternately displayed. When a new site is located, "AUTO REG" is no longer displayed and the display changes to the system of the new site.

The new system that is selected is the first higher system with a different site that could be accessed (wrap-around occurs after the highest system is accessed). The group that is displayed is determined by transceiver programming. It is either the same group that was displayed before registration occurred, or the group that was displayed when the new system was last selected.

Status Messages

Status messages can be automatically transmitted to your dispatcher if that feature has been programmed by your system operator. A message is transmitted each time the PTT switch is pressed with a Multi-Net system selected.

The STAT option switch or Menu mode "STATUS" parameter (see page 14) are used to momentarily display and change the current message. In this mode, the Select switch is rotated to display the desired message and then pressed to select the message. One of up to eight status messages can be selected such as "AT SITE", "LEVNG SITE", or "UNLOADING".

Calls on Priority and Block ID Codes

If your transceiver is programmed with Multi- Net or LTR systems, fixed priority and/or block ID codes may be programmed in addition to ID codes for the selectable groups. Calls on these ID codes are always received regardless of which group is selected or Group Scan programming (as long as the system with the codes is selected or scanned).

Calls on fixed priority ID codes and also certain Multi-Net special calls may have a higher priority than a call being received. If a call with a higher priority is detected, the current call is immediately dropped (if one is being received) and the transceiver switches to the higher priority call.

When a call on a priority ID is received, the ID codes of the selectable groups are checked to see if any are the same. If one is the same, the transceiver switches to that group. If none are the same, the group number does not change and "PRIORITY 1" (or 2) is displayed. When a call on a block ID is received, "BLOCK CALL" is displayed and the group number does not change.

Transmit Inhibit

The Transmit Inhibit feature can be programmed on Multi-Net and LTR systems by your system operator. This feature prevents the transmitter from keying if the mobile you are calling is busy with another call. When the transmitter is disabled by this feature, the intercept tone sounds and "TX INHIB" is displayed. To make another call attempt, the PTT switch must be released and then pressed again. However, you may want to wait a few seconds because an internal timer must count down before the attempt will be successful.

One use of this feature is to prevent the accidental interruption of a call in progress. It may also be used to provide an audible indication that the mobile you are calling is busy. A similar Transmit Disable On Busy feature is available on conventional systems (see page 16).

Telephone Mode

If the PHONE option key or the TELEPHONE menu parameter is available (see page 18), the Phone Mode can be selected to make placing telephone calls more convenient. It is also used to select telephone system/groups and dial preprogrammed telephone numbers. Proceed as follows to use the Phone Mode:

1. Press the PHONE switch or select the TELEPHONE menu parameter. This displays the first telephone system/ group in the current bank. If none are programmed, "NO RIC" is displayed. The status display indicates "PH" until a system/group is selected.

2. To scroll through the available telephone system/groups, turn the Select switch. Telephone system/groups are indicated by the handset symbol in the display. When the desired system/ group is displayed, select it by pressing the Select switch.

3. The alphanumeric display then indicates "SELECT NBR". If you wish to manually dial the telephone number using the keypad on the microphone, momentarily press the PTT switch to obtain a dial tone and then dial the number. Proceed to step g.

4. If you wish to recall a prestored number, rotate the Select switch to scroll through the programmed numbers. The unique identification programmed for each number is indicated in the alphanumeric display. Therefore, the actual telephone number being recalled may not be displayed.

5. When the desired number is displayed, select that number by pressing the Select switch.

6. To transmit the displayed number, momentarily press the PTT switch to obtain a dial tone and then momentarily press the PTT switch again to transmit the number.

7. To terminate the call by sending the # character and exit the Phone Mode, press the PHONE switch or press the MENU switch if using the Menu Mode. The transceiver then returns to the system/group that was selected before the Phone Mode was entered.

There is also a timer that is active in the phone mode until the number is transmitted. This timer causes the Phone Mode to be automatically exited if no activity is detected for 10 seconds.

LTR MODE FEATURES

Free System Ringback

If a busy condition exists when making an LTR *telephone* call, the Free System Ringback feature automatically signals when the system is available. It operates as follows:

When the PTT switch is released, the busy tone stops sounding and "RING BACK" is indicated in the display. Then when the system becomes available, a dial tone is heard and the number can be dialed. If dialing is not started within a few seconds, normal operation resumes. This feature is always available (special programming is not required), and it functions on telephone calls only.

System Search

If an out-of-range condition exists when making LTR *telephone* calls, the System Search feature automatically searches for another system that is within range. This feature is available only if it has been enabled by system operator programming or by the Menu mode "LTR SEARCH" parameter (see page 18). It operates as follows:

If an out-of-range condition occurs when the PTT switch is pressed, several access attempts are made. If none are successful, an intercept tone sounds and "OUT-OF-RNG" is displayed. When the PTT switch is released, the intercept tone stops sounding and "SYS SEARCH" is displayed.

The transceiver then attempts to access other programmed systems in the current bank that have a group programmed for telephone calls. A beep sounds as each access is attempted, and each eligible system is checked once. If no system can be accessed, an intercept tone sounds and the feature deactivates. If a system is accessed, that system and the telephone group are displayed and a dial tone sounds. The number can then be dialed. If dialing is not started within a few seconds, normal operation resumes.

Other LTR Features

Priority and Block ID Codes, the Transmit Inhibit feature, and the Telephone mode are available with LTR as well as Multi-Net operation. Since they operate the same in both modes, the Multi- Net description also applies to LTR operation. Refer to pages 14 and 15 for descriptions of these features.

CONVENTIONAL MODE FEATURES

Transmit Disable On Busy

This feature automatically disables the transmitter if the system (channel) is busy when the PTT switch is pressed ("BUSY" indicated in display). It can be enabled or disabled on each conventional group by system operator programming.

When the transmitter is disabled by this feature, the busy tone sounds and "TX DIS BSY" is displayed. It is not possible to access the system by holding down the PTT switch until the system is no longer busy. If this feature is not used, the transmitter keys even if the channel is busy, so the channel must be monitored as described in "Conventional Monitoring Before Transmitting" on page 11.

This feature may occasionally disable the transmitter even though monitoring indicates that no one is using the channel. To key the transmitter in this situation, the PTT switch can be released and then pressed again within 1 second.

Call Guard Squelch Control

The Call Guard Squelch feature eliminates distracting messages intended for others on conventional systems. This is done by using a subaudible tone or digital code to control the transceiver squelch. This tone or code is unique to a mobile or group of mobiles on that system. The transceiver does not unsquelch unless the correct tone or code is detected.

LTR and Multi-Net systems utilize ID codes to perform a similar function. Other types of tone decoders may also be used to control the squelch. If you have one of these, your system operator will provide you with additional information.

Monitor Mode

The monitor mode allows all activity on a channel to be monitored when Call Guard squelch or other types of decoders are used to control the squelch. The monitor mode disables these features so that all messages are heard. To select the monitor mode, take the microphone off-hook or press the MON switch if available.

The monitor mode is indicated by "MON" in the display. If scanning is enabled, the MON switch is not detected and monitoring occurs only when the microphone is taken off-hook when the revert (selected) system is a conventional system. The transceiver may also be programmed so that off- hook detection is disabled. The MON switch or the Transmit Disable On Busy feature must then be used to enable monitoring.

Repeater Talk-Around

Normally, all transmissions go through a repeater. A repeater is a special radio which receives and then retransmits your message at a higher power level to increase range. There may be times when you are out of range of the repeater system. You are then unable to talk to anyone, even though the mobile you are calling may be only a short distance away.

In this situation, the Repeater Talk-Around feature, if available, can be used to allow direct communication with the mobile without having to go through a repeater. To select this feature, simply select a group programmed for talk-around by your system operator. The unique identification may be used to indicate which groups are programmed for talk-around.

Your transceiver may also have the Talk- Around Select feature that allows you to manually turn talk-around on and off. This feature is provided by the TA option switch or the Menu mode "TALKAROUND" parameter (see page 17). When talk-around is enabled by the menu parameter, "ON" is indicated in the status display. When the switch is used, a triangle appears under the switch if talk-around is enabled by the switch or if it is enabled on the selected group by dealer programming. Changing the system or group causes talk- around to revert to the dealer programmed condition. Each conventional system can be programmed so that manual selection of talk-around is disabled.

Priority Group Sampling

Priority group sampling ensures that messages on priority system/groups are not missed while listening to messages on other system/groups. Both a first and second priority system/group can be designated in each bank of systems by system operator programming. When a priority message is received, either P1 or P2 is indicated in the status display.

Priority group sampling occurs only when system scanning is enabled. In addition, it must be the "Multi-Site" type as described on page 11. The first priority system/group is sampled while listening to a message on the second priority group but not vice versa. The transceiver can be programmed so that the first priority group is sampled every 0.5, 1, or 2

seconds or not at all. When a priority system/group is sampled while listening to a message on some other system/group, a series of "ticks" are heard. These ticks are brief interruptions of the audio signal that occur when sampling takes place.

This feature is available only on conventional systems. In addition, sampling does not occur while listening to an LTR or Multi-Net call or when transmitting any type of call. If the PRI option switch or Menu mode "PRIORITY" parameter is available (see page 18), priority sampling can be turned on and off.

Receive-Only Groups

Conventional systems can be programmed so that transmitting is disabled (monitoring only is permitted). If the PTT switch is pressed with one of these systems selected, the intercept tone sounds and "TX DISABLE" is displayed.

MENU MODE AND OPTION SWITCHES

Using Menu Mode

If the transceiver is equipped with a MENU option switch (see next section), the Menu mode can be selected to select various transceiver functions. The functions selectable in the Menu mode are indicated by an "X" in "Menu" column of the table on page 19.

NOTE: You probably will not be able to select all the functions in this table because some may be controlled by an option switch or they may not apply so have been removed from the menu by system operator programming.

To change an operating parameter using the Menu mode, proceed as follows:

1. To select the Menu mode, press the MENU switch.

2. To select the desired parameter, turn the front panel Select switch until it is displayed.

3. If the parameter has only on/off choices, the current status is shown as "ON" or "OF" in the status display (between the system and group numbers). To change the status, press the Select switch.

4. If the parameter has several choices, the current status is displayed by pressing the Select switch. Then to change the status, rotate the switch.

5. The Menu mode is exited and the choices selected in the following ways:

- Pressing the MENU switch

- Automatically 2 seconds after changing a parameter or 10 seconds after no activity.

If a call is received or transmitted while in the menu mode, the Menu mode is exited and any changes are saved. The parameters programmed in the Menu mode are described in the information which follows.

Option Switches

This transceiver can be equipped with up to six option switches as described on page 3. The function of each switch is indicated by a label on the switch. The functions which can be controlled by these switches are indicated in the table on page 19. A description of each of these functions follows.

NOTE: The following features may be controlled by an option switch or a Menu mode parameter or both as indicated in the table on the next page.

A/D (Scan List Programming)

This switch is used to add or delete systems and groups from the scan list. Pressing this switch changes the status of the displayed system or group that has a bar above it. This bar is moved between the system and group display by pressing the Select switch. An asterisk (*) in the status display next to the system or group number indicates that it is in the scan list. Refer to "Scan List Programming" on page 8 for more information.

Auto-Registration

This Menu mode feature is indicated by "MN AUTOREG" and is used to turn Multi-Net auto- registration on and off. Refer to description on page 14 for more information.

Auxiliary 1/Auxiliary 2

Up to two auxiliary functions defined by your system operator can be turned on and off. The Menu mode "AUX 1" and "AUX 2" parameters or the AUX 1 and AUX 2 option switches can be used. With a switch, the on condition is indicated by a triangle in the display under the switch.

MENU MODE PARAMETERS AND OPTION SWITCHES

FUNCTION	MENU ITEM	OPTION SWITCH	SWITCH LABEL	FUNCTION	MENU ITEM	OPTION SWITCH	SWITCH LABEL
A/D (Scn List Prg)		X	A/D	LTR System Search	X		
Auto-Registration	X			Menu Mode Select		X	MENU
Auxiliary 1	X	X	AUX 1	Monitor		X	MON
Auxiliary 2	X	X	AUX 2	Phone Mode Select	X	X	PHONE
Backlight	X	X	BKLHT	Priority	X	X	PRI
Bank Select	X	X	BANK	Radio Tones	X		
Call Guard Disable		X	CG	Scan On/Off		X	SCAN
Emergency		X	EMER	Scan List Save	X		
Encryption	X	X	ENCPT	Scan Type	X		
Ext PA (Mic audio)	X	X	PA-MC	Siren (see Aux 1/2)		X	SIREN
Ext PA (Rx audio)	X	X	PA-RX	Status Select	X	X	STAT
Home Sys/Grp		X	HOME	Talk-Around	X	X	TA
Horn/Light Alert	X	X	HORN	Viewing Angle Adj	X		

Backlight

The Menu mode "Backlight" parameter or the BKLHT option switch can be used to turn the display backlight on and off. This light allows the display and option keys to be seen in low-light conditions. If it cannot be controlled using either of these methods, it is usually programmed so that it always turns on with transceiver power.

Bank Select

If banks of systems have been programmed, the Menu mode "BANK SELCT" or BANK option switch select the bank in which the transceiver is currently operating. When the bank select mode is enabled, the Select switch is used to change the current bank. Refer to the "Bank Select" description on page 12 for more information.

Call Guard Squelch Disable

The CG option switch disables Call Guard squelch. Refer to page 11 for more information.

Emergency

This switch is typically the switch to the left of the display. It is pressed to set up a high priority call. Refer to page 13 for more information.

Encryption

Optional voice encryption provides protection from casual eavesdropping and analog scanners because the voice is changed so that it can be understood only by a mobile equipped with a similar encryption device. Each group can be individually programmed for encryption so that when the group is selected or scanned, encryption is automatically enabled or disabled.

Encryption can also be manually enabled or disabled by the ENCPT option switch or the Menu mode "ENCRYP-TION" parameter. Encryption is enabled on the displayed group when the circle/triangle symbol is displayed (see page 4).

Selecting another system/group causes this feature to revert to the state programmed by your system operator for that group. Encrypted calls are usually received even if encryption is not enabled on a group. However, encryption must always be enabled to transmit an encrypted call.

External PA (Mic Audio To PA)

If your vehicle is equipped with a public address system, this feature allows the transceiver microphone to be used to speak over that system. The PA-MC option switch or "EXTERNL PA" Menu parameter turn this feature on and off. When this feature is active, the alphanumeric display indicates "MIC TO PA" and the transmitter is disabled.

External PA (Receive Audio To PA)

If your vehicle is equipped with a public address system, this feature allows the receive audio signal to be routed to this system as well as to the regular speaker. The PA-RX option switch or "EXTERNL PA" Menu parameter can be used to turn this feature on and off. When this feature is active, the alphanumeric display indicates "RCV AUD PA".

Home System/Group

Each bank can be programmed with a "home" system/group that can be selected by pressing the HOME option switch. If in the scan mode, this system/group is displayed for the length of the receive scan delay and then scanning resumes.

Horn/Light Alert

An external alert such as the vehicle's horn or lights can be used to signal a call. The HORN option switch or "HORN/LIGHT" Menu mode parameter can be used to turn this alert on or off. The on condition of the option switch is indicated by a triangle in the display under the switch. Refer to the "Horn/Light Alert" description on page 14 for more information.

LTR System Search

The "LTR SEARCH" menu parameter enables or disables the LTR system search feature (described on page 16). If it is enabled, the transceiver automatically searches for a free system whenever a busy condition occurs when making an LTR telephone call.

Menu Select

The MENU option switch selects the Menu mode described on page 18.

Monitor Mode Select

The MON option switch can be used to select the monitor mode as described on page 11.

Priority

If priority group sampling has been programmed on conventional systems by your system operator, the PRI option switch or the "PRIORITY" Menu mode parameter can be used to enable or disable that feature. Refer to "Priority Group Sampling" on page 17 for more information.

Radio Sounds

The "RADIO SNDS" menu parameter selects the tones that are heard when switches are pressed or busy or out-of-range conditions exist. If this menu parameter is not available, the tones which sound are fixed by system operator programming. The four available conditions are listed below.

Silent - No tones at all sound.

Key Beeps - Only the Option and Select switch beeps sound.

Alert Tones Only - The proceed, busy, and intercept tones sound, but not the key beeps.

All - All tones sound.

Scan On/Off

The SCAN option switch can be used to turn the system scan feature described on page 8 on and off. The on condition is indicated by a triangle in the display under the switch. If you do not have this switch, scanning is not available.

Scan List Save

The "SCAN SAVE" menu parameter selects whether or not your changes to the scan list are saved when power is turned off. If "ON" is selected they are saved, and if "OF" is programmed they are not saved. Refer to "Scan List Programming" on page 8 for more information.

Scan Type

The "SCAN SELCT" menu parameter selects the type of system scanning that occurs when it is enabled by the SCAN switch. Either "MULTI- SITE" or "SNGLE-SITE" can be selected. The multi-site type scans all system/groups in the current bank and scan list, and the single-site type scans only Multi-Net systems that are programmed with the same site. The type of scanning is indicated in the alphanumeric display. Refer to "Multi-Site and Single-Site Scan" on page 11 for more information.

Siren/Light Bar

The SIREN option switch turns the siren and lights of public safety vehicles on and off (if an appropriate interface box has been installed by your system operator). The on condition is indicated by a triangle in the display under the switch.

Status Select

The STAT option switch or "STATUS" menu parameter is used to select the status message that is being transmitted each time the transmitter is keyed. Up to eight status messages may be programmed by your system operator. The Select switch is rotated to display the messages and then pressed to select the desired message. Refer to "Status Messages" description on page 14 for more information.

Talk-Around

The TA option switch or "TALKAROUND" menu parameter is used to manually turn talk- around on and off on conventional systems. Refer to "Repeater Talk-Around" on page 17 for more information.

Viewing Angle Adjust

The "VIEW ADJST" menu parameter sets the viewing angle of the display. This provides optimal intensity at the viewing angle being used. Viewing angles represented by 0-15 can be selected. "0" selects -45° and "15" selects +45°. Note that when toggling from "15" to "0", the display may appear to indicate all 8's. However, the correct information is actually being displayed when it is viewed from the selected angle of -45°.

MISCELLANEOUS

Supervisory Tones

NOTE: The following tones are heard at various times when operating this transceiver. They are heard only in the LTR or Multi-Net mode unless noted otherwise.

Busy Tone - This tone is similar to the standard telephone busy tone and it indicates that the radio system is currently busy. It sounds when making all types of Multi-Net and LTR calls and also when Multi-Net Busy Queuing is programmed. The display also indicates "SYSTEM BSY" when this condition occurs.

Intercept Tone - This is a siren-like tone (alternating high and low tones) which indicates the following error conditions:

- If this tone sounds after the transmit indicator flashes several times and "OUT-OF-RNG" appears in the display, an out-of-range condition is indicated. To complete a call, you may need to drive closer to your radio system or

away from shielding structures. Once this tone sounds, no more access attempts are made until the push-to-talk switch is released and then pressed again.

- If this tone sounds after the transmitter has been on for an extended period and "TX TIMEOUT" appears in the display, the transmitter has been disabled by the Time-Out Timer feature (see page 14).

- If this tone sounds as soon as the PTT switch is pressed with a conventional system selected and "TX DIS BSY" is displayed, the transmitter was disabled by the Transmit Disable On Busy feature (see page 16). This indication also occurs if the push-to-talk switch is pressed while receiving an LTR call.

- If this tone sounds as soon as the push-to-talk switch is pressed and "TX DISABLE" appears in the display, a channel is selected in the conventional mode that is programmed as receive-only (see page 18).

Proceed (Clear-To-Talk) Tone - This is a short tone which sounds when the push-to-talk switch is pressed. It indicates that the system has been successfully accessed and speaking can begin. It is always enabled on LTR and Multi-Net systems and can be programmed on conventional systems. Refer to description on page 14 for more information.

Key Press Tone - This is a short tone that sounds when an option switch is pressed or the Select switch is changed. This tone can be disabled by system operator programming or by the Menu mode "RADIO SNDS" parameter (see page 21).

MULTI-NET TELEPHONE CALL TONES

Confirmation Tone - This is a short tone that sounds when the number just dialed is accepted by the system.

Call Proceed Tone - With Multi-Net special calls other than telephone calls, ringing does not occur after the number is dialed. Instead, another short tone sounds after the confirmation tone to indicate that the audio path is complete and speaking can begin.

End Call Tone - Three beeps which indicate that the end of the call has been detected by the system.

Proceed Dialing Tone - When placing a landside- to-mobile call (refer to page 7), the landside caller may enter a special number which specifies the mobile being called. This tone indicates when that number should be dialed.

LTR TELEPHONE CALL TONES

Free System Ringback Tones - In the Free System Ringback mode (see page 16), a ringing tone sounds when the system is no longer busy.

Reorder Tone - Three beeps which indicate that the call has been terminated by the system.

Return Time Warning Tone - Two beeps which warn that you have not transmitted for an extended period during the call. If you do not transmit within 5 seconds, the call is automatically terminated by the system. The time between transmissions is one of the parameters used to detect the end of a call when the # character is not sent.

Conversation Time-Out Tone - Calls are limited to a certain length by the system. Thirty seconds before this time is reached, a "tick" begins sounding each second. After 30 seconds, the call is automatically terminated by the system.

Turn-Around Tone - This is a single beep which may be used to indicate to the landside party when to respond to your transmission. It sounds when you release the PTT switch, and you may partially hear this tone.

Proceed Tone - This tone consists of two beeps and it tells the landside caller when to enter the five-digit number specifying the mobile being called. Dialing of this number must be started within 5 seconds of hearing this tone, and a tone-type telephone must be used.

Display Messages

The following messages may appear in the ten-character alphanumeric display.

ALL CALL - Indicates that the Multi-Net "All Call" special call is being received. This is a high- priority call to all mobiles assigned to a site. If another call is being received, it is dropped to receive this call.

AUTO REG - Indicates that the transceiver is attempting to register on another system. Refer to "Auto-Registration" description on page 14.

BLOCK CALL - Indicates that the call is being received on a Multi-Net or LTR block ID code (see description on page 14).

EMERGENCY - Indicates that the emergency switch has been pressed (see page 13).

GPSCN DSBL - Indicates that an attempt was made to delete a group from the scan list with group scanning disabled.

HI BATTERY - The transceiver senses the battery voltage and if it rises to a point where transceiver damage may result, this message is displayed and the intercept tone sounds. If this message persists, contact your dealer or have the vehicle's electrical system checked.

IN QUEUE - Indicates that the call has been placed in a queue by the Multi-Net Busy Queuing feature (see page 13).

MIC TO PA - Indicates that the microphone audio has been routed to a public address system (see "Mic Audio to PA" description on page 20).

MULTI SCAN - Indicates that the Multiple-Site type of scanning is occurring (see page 11).

NO DAT GRP - Indicates that no valid data group could be found for a data transmission.

NO NUMBERS - Indicates that the Phone mode is selected and no telephone numbers have been preprogrammed (see page 15).

NO RIC FND - Indicates that no telephone system/group could be found in the Phone mode (see page 15).

NO TALK - Indicates that talk-around has been disabled on the selected system by dealer programming (see "Repeater Talk-Around" on page 17).

NOT MULTI - Indicates that an attempt was made to enable a Multi-Net feature on an LTR or conventional system.

NOT ON CNV - Indicates that an attempt was made to enable a conventional mode feature on a Multi-Net or LTR system.

OUT-OF-LOK - Indicates that the synthesizer is out-of-lock. Refer to "Transceiver Servicing" on page 26.

OUT-OF-RNG - Indicates an out-of-range condition. Refer to the "Intercept Tone" description on page 22 for more information.

PRIORITY 1 or 2 - Indicates that a Multi-Net or LTR priority call is being received (see "Calls on Priority and Block ID Codes" on page 14).

PROG ERROR - Indicates a memory read error. Refer to "Transceiver Servicing" on page 26.

RCV AUD PA - Indicates that the receive audio has been routed to a public address system (see "Receive Audio to PA" description on page 20).

RING BACK - Indicates that the LTR Free System Ringback mode has been entered (see page 16).

SELECT NBR - Displayed in the Phone mode to indicate that a preprogrammed telephone number should be selected or a number should be dialed manually (see page 15).

SNGLE SCAN - Indicates that the Single-Site type of scanning is occurring (see page 11).

SUMMIT 8 or 9 V 2xx X - This message is displayed for an instant when transceiver power is turned on. "SUMMIT" is the model of the transceiver, "8" indicates that it is an 800 MHz version, and "9" indicates that it is a 900 MHz version. The number after the "V" identifies the version of software that is being used, and the last number indicates the tier level of the transceiver.

SYS SEARCH - Indicates that the LTR System Search mode has been entered (refer to page 16).

SYSTEM BSY - This along with a busy tone indicates that the radio system is currently busy (see "Busy Tone" description on page 22).

TX DISABLE - Indicates that the selected conventional system is programmed for monitoring only (see page 18).

TX DIS BSY - Indicates that the transmitter is disabled by the Transmit Disable On Busy feature (see page 16). This message also indicates that the transmitter has been keyed while receiving an LTR message. Wait until the message is finished to key the transmitter.

TX INHIBIT - Indicates that the transmitter has been disabled by the LTR/Multi-Net Transmit Inhibit feature (refer to page 15).

TX TIMEOUT - Indicates that the transmitter has been disabled by the Time-Out Timer (refer to page 14).

RMT ERROR - Indicates that an incompatible remote control unit is connected.

Speaking Into The Microphone

For best results, hold the microphone about 1-2 inches away from your mouth and speak slowly and distinctly at a normal conversational level. Do not shout into the microphone since it distorts your voice and does not increase range. Make sure the push-to-talk switch is pressed before you begin to speak and released as soon as the message is complete.

Operation At Extended Range

When approaching the limits of radio range, others may not always hear your transmissions and there may be an increase in background noise when messages are received. Communication may be improved by driving the vehicle to

higher ground or away from shielding structures such as tall buildings and hills. Changing the direction of the vehicle may also improve signal quality.

Preventing Battery Discharge

In the standby mode (power on, receiver squelched), transceiver power consumption is relatively low. Therefore, the transceiver can be left on for one or two days without operating the vehicle and the battery should not become seriously discharged. However, if the outdoor temperature is low enough to significantly decrease battery capacity, the transceiver power should be turned off when the transceiver is not in use.

Since power consumption is significantly higher when transmitting, it is good practice to have the vehicle running while transmitting. This ensures that there is sufficient power to the transceiver and that the charge of the battery is maintained.

Transceiver Servicing

If the transceiver is not operating properly, turn the power off and then on again to reset the control logic. Also make sure that the front-panel controls are properly set and that the antenna, external speaker (if used), and power cables are securely plugged into the back of the transceiver. If the transceiver still does not operate properly, contact your dealer for service.

NOTE: There are no user-serviceable components in this transceiver. Altering internal adjustments can void the warranty and cause illegal emissions, and result in improper operation that can seriously damage the transceiver.

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